



GSA Office of Governmentwide Policy



■ 2012 GSA Achievement Award for Real Property Innovation

Office of Real Property Management • October 2012

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Introduction

The GSA Achievement Award for Real Property Innovation publication is made possible through the collaborative efforts of the U.S. General Services Administration's (GSA), Office of Real Property Management and the Federal agencies that participated in GSA Achievement Award for Real Property Innovation Program. The award highlights and recognizes innovative projects in Federal asset management, sustainability and workplace innovation. An independent panel of distinguished public and private sector experts judged the award program entries for the Asset Management, Sustainability and Workplace Innovation categories.

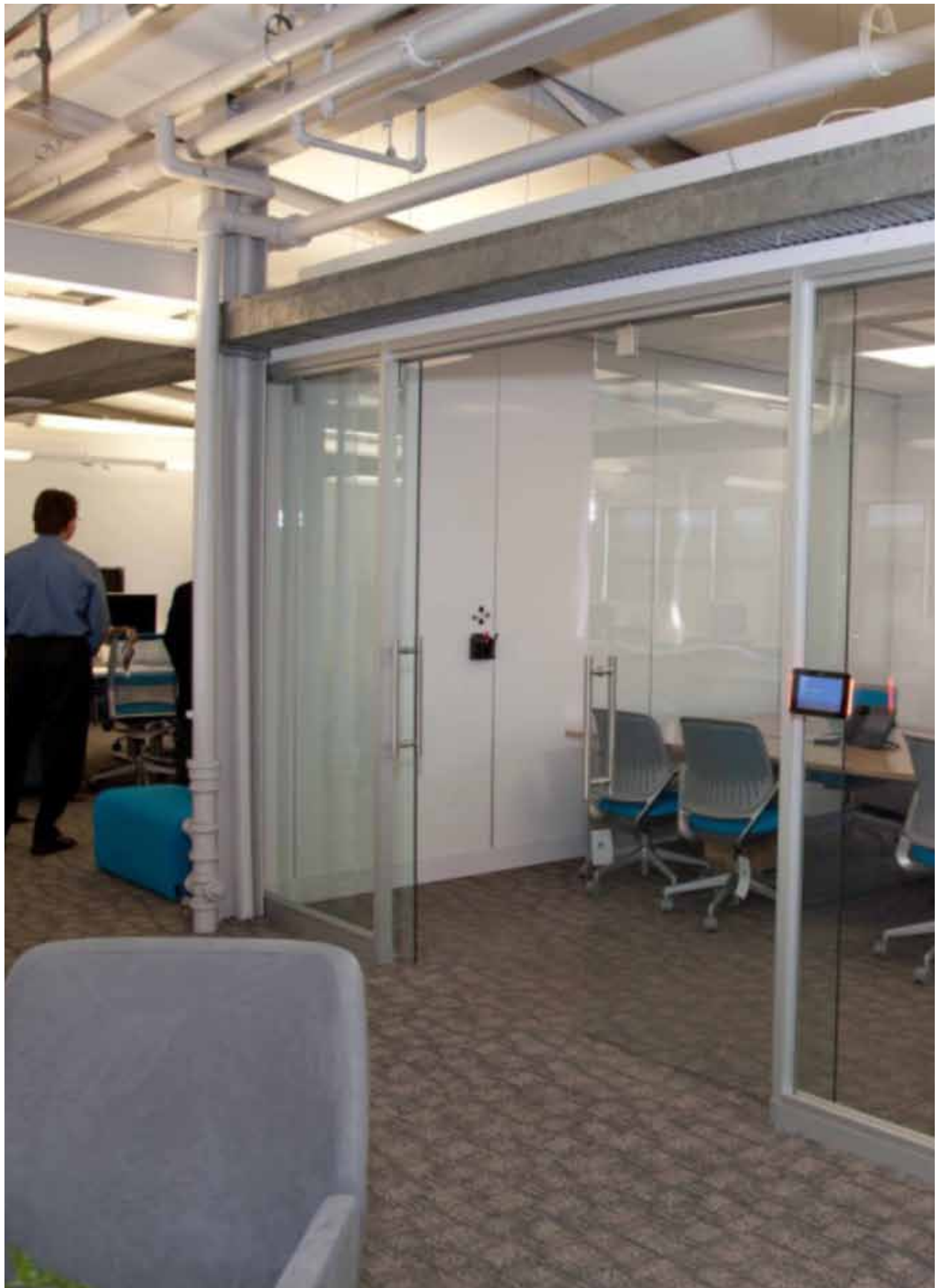
This is an annual publication of GSA's Office of Governmentwide Policy's (OGP), Office of Real Property Management in Washington, DC. OGP is led by Associate Administrator Kathleen Turco, and Carolyn Austin-Diggs as Director for the Office of Real Property Management. The publication is produced by the Performance Measurement Division, led by Director George Deryckere.

For information about the GSA Achievement Award for Real Property Innovation, please contact Patrice Walker, Program Manager, at 202-208-7639 or patrice.walker@gsa.gov or visit www.gsa.gov/realpropertyaward.



Workplace Innovation

This award recognizes exemplary initiatives, innovations and projects in Workplace Innovation and communicates these cutting-edge ideas to agencies that aim to improve their real property management. Achievements are related to creating workplaces that are focused on the future by fostering environments that incorporate integrated and sustainable approaches, enhances employee and business performance, that result in long-term cost savings and design.





Winner

U.S. General Services Administration

GSA Headquarters 7th Floor Prototype

In response to customer agency needs and the mandates to reduce agency real estate costs, GSA Regional Offices across the country are finding ways to greatly improve the function and efficiency of office space. To demonstrate this, GSA is developing workplace “labs” that show ways to make workspace more effective and attractive. One of the most prominent and early examples is the GSA 7th Floor Prototype Office, recently developed for three GSA headquarters organizations.

Drab, lifeless, underutilized office space was typical for the GSA Office of Portfolio Management, Office of Leasing, and Office of Client Solutions. Located in the GSA Central Office HQ, their space did not support the type of dynamic, energized, collaborative organization envisioned by leadership and needed by staff. At the same time, a series of drivers impacted the specific organizations (and the agency as a whole). These included the Presidential Memo of June 2010 mandating \$3 billion in cost savings by the end of fiscal year



2012; the Telework Enhancement Act of 2010 and GSA Mobility and Telework Policy, setting parameters for and driving increased telework, Executive Order 13514: Federal Leadership in Environmental, Energy and Economic Performance, calling for increased energy efficiency, reduced production of greenhouse gases, and eliminating waste in federal space; federal budget cuts; advancements and availability of new technology supporting mobile work; multi-generational differences in workplace expectations, and the GSA Administrator's Challenge to house significantly more people in the renovated headquarters building.

All of these drivers, except perhaps the Administrator's Challenge, are also impacting GSA's federal agency customers. Developing new space prototypes will help GSA help our agency customers.

The new space is designed to take advantage of the combination of new work practices and mobile technology. Located on the top floor of the GSA Building, 1800 F Street NW,

Washington, DC in Suites 7300 and 7040, the new office space provides an activity-based work environment in combination with hoteling and telework to support 170 people in a space that previously housed 73. The new workplace supports a variety of tasks and individual work styles. By incorporating mobile work concepts, hoteling, space sharing and staff sharing, the new workplace better supports the needs of the organization in half the space and at reduced cost.

Through an integrated design process that included a user survey, user focus groups, pre-decisional involvement of the union, management visioning session and interviews, all-staff town hall meetings, and post-occupancy evaluations, the staff, management, workplace consultants and space designers explored ways to create a place that brings people together, supports a variety of work activities, and makes better use of the organization's resources – both people and space.



Workplace Innovation Recognized Entries

U.S. General Services Administration Workspace Utilization and Allocation Benchmark Study

The Federal government has constantly strived to reduce the costs and size of its real property inventory. The Presidential Memorandum -Disposing of Unneeded Federal Real Estate—Increasing Sales Proceeds, Cutting Operating Costs, and Improving Energy Efficiency was issued in June 2010 and required agencies to find \$3B in cost savings. This has led to Federal agencies looking for ways to reduce the space they are occupying.

Prior to 1995 The General Services Administration (GSA) mandated space allocations for individuals based on their pay grade. That practice was discontinued and the Code of Federal Regulations was modified to state, "Space allowances are derived from specific studies of the operations of the agencies, and are directed toward providing each employee with enough space to work efficiently". Other

current guidance indicates agencies are required to provide a quality workplace while maximizing the value of federal real property. This eliminated the requirement for Federal agencies to provide a specific amount of space for each individual.

However, without formalized guidelines it also enabled agencies to increase the area allotted to each individual. With the pressure to reduce costs and footprint, agencies have been looking for ways to reduce space. Ray Wynter worked in the Office of Real Property Management and was responsible for fielding the majority of the calls from the numerous individuals who would still contact GSA trying to find information on the space allocation standards.

In 1997 the GSA produced the "Office Space Use Review: Current Practices and Emerging Trends," with an updated version published in 2002. As agencies were attempting to scale down their office space it seemed the documentation available to determine what was acceptable was either outdated or eliminated. Consequently,

agencies were at a loss in trying to define an acceptable goal for determining the square footage allocated to office space. To assist agencies in the dilemma of determining space requirements and allocations, Mr. Wynter took the initiative of conducting an international workspace survey to produce an updated publication individuals could use to determine what the industry standards were. The document is titled "Workspace Utilization and Allocation Benchmark". The study contains space data from numerous Federal agencies, domestic and foreign companies. Readers are treated to a professional level of information comprised of basic data that has been analyzed to provide the answers people are looking for in a straight forward manner.

The "Workspace Utilization and Allocation Benchmark" study was not developed as a means to develop cost savings. The study was undertaken to provide Federal agencies the information necessary to make effective decisions. By providing agencies with the data necessary to compare their workplace arrangements with other agencies it helped them decide their goals. An agency that allocates 300 square feet per person doesn't know whether that is excessive, norm or minimal. The study provides the agency the opportunity to review data from other organizations and develop a goal to reduce their standard to 200 square feet per person, which is more in line with other agencies.

The study is important because it enables Federal agencies to be more effective and efficient in their workspace planning

and decisions. The analysis is straight forward and broken down to various levels of comparison. To take into consideration the different work requirements found in the workplace the information is separated to show the differences by industry. The study also includes some appropriate case studies and articles readers can relate to. The document is available to everyone and can be downloaded from the GSA website. There have been numerous responses to the document stating how effective it was in providing some of the information essential to organizations attempting to determine if their space allocations were within the norms of the industry.

Although this project was not developed as a replicable method to save costs, it met the needs of many Federal agencies and has the potential to assist agencies in developing new workplace settings that will lead to cost savings in the future.

U.S. General Services Administration Innovations the Procurement of Demand Response and Natural Gas

The General Services Administration's Natural Gas Acquisition Program (NGAP) has awarded \$105 million in natural gas supply contracts since the start of FY11. These awards were made to 16 qualified natural gas suppliers which included both certified women-owned and veteran-owned small businesses. Comparing previous contract rates to the ones awarded since the beginning of FY11, Federal agencies will realize cost reductions of \$33 million or 24% as a result of NGAP. Of equal importance to

the cost savings generated, the NGAP staff has continued to strengthen relationships with acquisition professionals within the agencies that rely on this program. Two national level examples include the Bureau of Prisons Field Acquisition Office and Veterans Administrations National Energy Business Center. Throughout the year NGAP staff members talk directly with acquisitions and operations professionals at the agency and facility levels to discuss contracting best practices, bid specifications and changes in regional and utility level natural gas markets. By actively working with other acquisition professionals to share knowledge, these agencies are better able to utilize the tools, policies and strategies needed to procure deregulated energy commodities such as natural gas, electricity and renewable energy. As a testament to NGAP's effectiveness and replicability, the program has as grown by 30% since the beginning of FY11 and Federal agencies other than GSA now make up 71% of the program's aggregated natural gas volume.

In addition to NGAP's successes in natural gas procurements, the NGAP staff also conducted the first successful Federal demand response auction in January 2012. Two agencies were included in the procurement, both had existing contracts for demand response services that were set to expire in the coming months. GSA included accounts in Chicago and the Veterans Administration (VA) included two of its larger hospitals in the New York City area. Though NGAP required demand response providers to bid on GSA's terms and conditions which had not been

done before, the auction resulted in GSA and the VA increasing revenue shares from participation in demand response programs from 75% to 91.8%. The agencies will receive \$1.5 million in revenues over the next three years as a result of this landmark competitive procurement. GSA's commitment to leveraging new and innovative approaches to foster competition from demand response service providers highlights its commitment to lead by Example.

U.S. General Services Administration Region 09 ARRA Tracking Database

There are a myriad of financial tracking systems at the General Services Administration, but few were scalable and flexible enough to use for regional program and project level tracking at the onset of the American Reinvestment and Recovery Act in 2009. As the Program Management Office, responsible for ARRA at GSA, began standing up construction industry specific project tracking systems for agency wide use, the regional ARRA management offices needed more immediate tools to track the funding that was quickly being dispersed. It was this capability gap that Greg Hamlin sought to address when he and his team began to design and construct the ARRA Financial Tracking Database. In Greg's own words, "I needed a single place to track all of the projects and the R9 ARRA database allowed me the flexibility to create custom reports/queries as needed."

The database is a Microsoft Access database that has the ability to detail the project funding life cycle from appropriation to expenditure. Greg and the ARRA team have successfully used the ARRA Financial Tracking Database to keep detailed notes on Region 9's \$586M ARRA project portfolio and it has contributed to the region's success in meeting PBS's 2010 obligation measure, \$522M obligated, and 2011's outlay measure, \$273M outlayed. Outside of the R9 ARRA program, the track system is being considered for usage in supporting enterprise wide systems like EPM because of its usefulness in creating adhoc reports and its proven track record for accuracy.

U.S. General Services Administration Region 9 ARRA Photo Contest

Two years after the American Recovery and Reinvestment Act began, ARRA projects across the General Services Administration were starting to show physical signs of progress. Construction was now underway on jobsites. Crews were mobilized. The Recovery Act was achieving its goal of getting people back to work. The only thing that was missing was a fun way to tell and share this story in a different way from the standard reports. Marcos Maestas and Jessica Snyder created the R9 ARRA Photo Contest to do just that. Earlier in the year they submitted personal photos of GSA buildings where Recovery Act sponsored work was being constructed to the Recovery.gov's Flickr.com page in an

effort to share GSA's story with the general public. The problem was two people could not generate enough photo content to tell the story in this manner. It needed to be bigger, thus the contest was born.

The R9 ARRA Photo Contest was simple. A list of current R9 GSA Recovery Act projects was posted online along with contest rules and entry instructions. Contestants could either take pictures of buildings where ARRA projects were happening, employees who were working on Recovery Act projects, and/or ARRA jobsites themselves, if accessibility was permitted. The photos entries were filtered into 3 categories, "Best Photo" as voted by the employees of R9, "ARRA @Work" which was photos of ARRA staffers and again voted on by R9 employees, and "Executive's Choice" as voted on by the regional Executive Team. Over 100 entries were submitted and over 200 votes were cast. The winners received gift certificates and were featured in a regional news story. Photos have been archived and some have been added to Region 9's Flickr.com page for the general public to see. Marcos and team plan to hold another photo in the near future to capture the progress that has occurred since the last contest and to continue the educational process of the Recovery Act effort. Please see the links posted for additional details.

U.S. General Services Administration

gPM – A Consistent, Disciplined Approach to Project Management

GSA's Core Business is to provide innovative products and solutions to other federal agencies. The scope of our work ranges from new buildings, to information tracking systems, to small space alterations. At the heart of every offering is a plan to implement and manage the project. If the project isn't managed effectively, it will likely cause schedule and cost over-runs. In this age of budget reductions and cost-cutting, it is essential that GSA manage ALL projects and processes in the most efficient manner possible. The magnitude of GSA's Public Buildings Service (PBS) operations and its customers' demand for better communication and project delivery prompted PBS to develop a consistent, disciplined methodology for managing projects. This approach is called Global Project Management (gPM).

Managing PBS projects with a global approach is about rethinking the major phases of project delivery at the very beginning of a project. Up-front project strategy, teamwork, and streamlined methods are utilized to yield consistent results. Maintaining this approach throughout the project creates value for the customer and the GSA team, providing a fully integrated experience.

Begun as a national program in FY 2010, gPM seeks to educate all PBS employees in the basics of good project management. It is founded on the Project Management Institute's (PMI) four basic stages of a project: Initiation, Planning, Execution and Control, and Closeout.

Key components of gPM include:

1. Assigning a Project Manager and Project Sponsor at the very beginning of EVERY project; they continue with the project through close-out. Consistency is maintained throughout the life of the project.
2. Eliminating handoffs and "stove-pipe" separation of duties; teamwork is key.
3. Connecting project management theory to the practical execution of projects.
4. Offering simple, scalable templates and instructions for each project management activity.

To ensure that good project management practices are permanently embedded in PBS's culture, a Project Management Office (PMO) was created in May 2011 within the Office of the PBS Commissioner. The PMO's mission is to lead the evolution of PBS's culture; to develop and implement project management policy, practice, and tools; and to integrate new and existing PBS initiatives within a project management framework.

U.S. General Services Administration Nutrition Fair

While the American Reinvestment and Recovery Act afforded GSA with the opportunity to invest in the federal inventory, the GSA Wellness Program provided an equally important opportunity to invest in the health and welfare of the Federal employee. In May 2009, President Obama tasked the Office of Personnel Management (OPM) with developing wellness best practices and a plan for the federal workforce. In addition, the White House Offices of Management and Budget and Health Reform began working with federal agencies to provide healthier food choices to federal employees. This effort to improve food choices at federal facilities was led by the U.S. General Services Administration (GSA) with assistance from the U.S. Department of Agriculture (USDA). In February 2010, GSA released the guidance for Wellness and Sustainability Requirements for Contracts at federal facilities.

GSA worked collaboratively to create this document, which proposes specific food, nutrition, and sustainability guidelines to complement the GSA procurement guidelines. Each Region was tasked with executing the wellness guidelines and educating the agencies about lifestyle choices that will help them reach their wellness goals. The Region 9 team chose to hold the First Annual Health Fair at the Regional Office located in San Francisco, CA. The Fair, open to both the tenant agencies and general public, provided vital information on simple lifestyle changes.

Twelve vendors provided informational packets and mementos that focused on every aspect of a healthy lifestyle (from nutritional guidance, physical fitness, to a demonstration on preparing a raw food meal). The team capitalized on the local neighborhood connections of the GSA Green Team and sent out requests for attendance early in the planning stages. The coordinated effort and collaboration with the local Field Offices proved to make the Health Fair successful. Realizing that a healthy workforce is a productive workforce, the team intends to make this an annual event as wellness of the workforce and the workplace will continue to be an ongoing issue.

U.S. General Services Administration HOTD Cogeneration Project

The Heating Operations and Transmission District (HOTD), a division of GSA, upgraded its operations and reduced costs to customers with the completion and implementation of the Cogeneration Project. This project has helped GSA and HOTD customers achieve significant energy conservation and reduce operating expenses, and all achieved savings result in reduced costs for the American taxpayer. The installation of the cogeneration facility met the Main Steam Plant's electric needs while reusing waste heat for steam production.

In 2008, HOTD completed the installation of an upgraded turbine generator to provide

electricity for all HOTD operations and sell surplus power back to the electric utility serving the site as well as recycle waste heat to produce additional steam for customers. This installation also included the addition of several more chillers so that HOTD could service Smithsonian Institution museums located along Independence Avenue. This eliminated the need for those facilities to install their own chillers beneath the National Mall, which would have included unsightly stacks. This installation generated savings that significantly defrayed the annual cost of natural gas and electricity for plant operations and maximized the return on investment for cogeneration operations.

By utilizing creative and innovative problem solving techniques, the HOTD Cogeneration Team was able to generate savings that significantly defrayed the annual cost of natural gas and electricity for plant operations and maximize the return on investment for cogeneration operations. Net savings for the three-month summer period of 2008 were \$1.7M while demand capacity charges for the 2009 were reduced by over \$500K, and overall energy savings in 2010 were 238,807 MMBtu with dollar savings of \$1.2M, including \$630K in demand capacity charge reduction. By recycling the waste energy to produce steam, carbon dioxide emissions were reduced by 20%. This improvement in operational efficiency is just one more aspect of the renewed focus of the entire HOTD organization on energy management and efficiency as mandated in EO 13423, and all achieved savings result in reduced costs for the American taxpayer as well as for HOTD

U.S. General Services Administration

Heating Operations & Transmission Division (HOTD) – Security System Upgrade

HOTD has recently completed a system wide upgrade to the Central Heating Plant security system. This upgrade included modernization of surveillance cameras, installation of a state of the art visitor's management system (VMS) and modernization of the entry management system.

The upgrades have allowed for integration of all three systems into a single monitoring point allowing for greater ease of use and monitoring flexibility. The modernization of the camera system has improved video resolution and increased area of coverage allowing for expanded monitoring of operating equipment and areas that are hazardous to access thus providing a safer work environment. The video storage system has been upgraded to use a state of the art Unix open platform. This allows for easily expanded camera coverage and redundant memory. The plant entry system has been upgraded to utilize a biometric access control system. This has allowed for greater flexibility in securing vital areas of the plant and has eliminated the need to maintain multiple copies of keys. The system also provides for the use of standard issue GSA ID eliminating the need for an additional key card. The new visitor management system allows for real-time evaluation of clearance for plant visitors.

The system provides for the creation of photographic visitor passes allowing for immediate identification of a visitor's reason for being onsite and the individual's contact person. The VMS also adds the capability to connect to DHS databases in real-time and run a background check of visitors.



Asset Management

This award recognizes exemplary initiatives, innovations and projects in Asset Management and communicates these cutting-edge ideas to agencies striving to improve their real property management.

Achievements are related to asset management planning, inventory management, performance management, utilization and disposal of real property, transportation and infrastructure improvement and portfolio optimization.





■ Winner

U.S. Department of State

Haiti Canne à Sucre Project:

Seismically-Sound and Cost-Effective Housing for the U.S. Embassy Staff, which Successfully Withstood a Major Earthquake

In January 2010, a 7.0 magnitude earthquake struck Port-au-Prince, Haiti, resulting in the destruction of over 250,000 housing units and 30,000 commercial buildings. The death toll exceeded 316,000 people. The Canne à Sucre Housing Compound for the U.S. Embassy staff, completed in late 2009, sustained virtually no damage thanks to its high-quality, seismic construction. As a result,

all of the U.S. Government (USG) employees that resided in the compound survived the earthquake. The compound also served as a refuge for USG personnel that had to be moved from unsafe residences. In addition to withstanding an earthquake, the Canne à Sucre project (1) was innovative in several areas, (2) will save millions of dollars in rents, utilities, maintenance, and security, and (3)



spurred similar projects throughout our global real estate portfolio.

The U.S. Department of State's Bureau of Overseas Buildings Operations (OBO) manages the real property for 275 Embassies and Consulates in over 180 countries. As part of its mission, OBO provides all USG personnel with housing. If the USG does not have existing housing stock in a city, then finding safe, secure housing can often be difficult. For example, Port-au-Prince is located in seismic zone 4, which is the highest seismic rating. Yet, most of its residences are not built to international seismic standards. In 2008, OBO addressed its housing vulnerabilities in Haiti with an innovative "Build-to-Lease with a Purchase Option" transaction. OBO leveraged the private sector to deliver a 37-unit housing compound that was seismically-sound and cost-effective. The transaction was innovative in several ways:

- Leveraged the Private Sector to Meet Seismic Standards --- OBO leveraged a private-sector, local developer to construct

housing that met our seismic goals.

- Used Build-to-Lease with a Purchase Option --- OBO used a Build-to-Lease with a Purchase Option approach that involved minimal commitments to the project and gave the USG the choice to either lease or purchase units at fixed prices.
- Clustered Housing to Reduce Costs --- By clustering the housing, the Embassy reduced operational, maintenance, and security costs.



Team Photo



- Achieved Sustainable Goals in Cost-Effective Ways --- OBO achieved some of its sustainability goals by locating the housing within walking distance of the Embassy and using a simple, energy-efficient design with local materials.

The Canne à Sucre project was also a financial success. The USG will save over \$30 million on rents, utilities, maintenance, and security over the estimated useful life of the project. Finally, because OBO pre-negotiated a purchase option several years ago, we are now exercising that option at a very attractive price.

OBO estimates it will purchase the project for approximately \$9 million less than its current market value.

OBO is already replicating this approach for other seismically-dangerous posts. We are planning a 75-unit clustered housing compound in Santo Domingo, Dominican Republic, which is also in seismic Zone 4. The project should break ground in 2013. We are also considering other locations across our overseas portfolio.



Asset Management Recognized Entries

U.S. Department of Defense Next Generation Planning Tools for DoD Facilities Asset Life Cycle Management

With over 539,300 facilities valued at a plant replacement value of over \$720 billion, the U.S. Department of Defense (DoD) is one of the world's largest facility owners. These facilities, and the system and components within them, have varying ages, conditions, and work requirements that are constantly changing as infrastructure deteriorates, new technology or new regulations emerge, and as mission priorities change. Due to the immense scope and dynamic operating environment, the effort of managing and directing the investments for these facilities presents a unique challenge, both at the agency headquarters level and at the installation level with each Public Works Directorate.

To meet these challenges, the DoD services have turned to BUILDER™ for objective,

repeatable, consistent, and affordable facility investment guidance. Developed by the U.S. Army Corps of Engineers, BUILDER™ incorporates patented technology that integrates engineering, architectural, and management business rules into a decision support tool for facility maintenance management professionals. Consisting of asset inventory, condition and functional assessment, maintenance and repair (M&R) identification, and long term forecasting and planning modules, BUILDER™ is designed to give facility engineers better awareness of M&R needs. The approach ensures that consistent results are assured across sites, organizations, and agencies. This means enterprise policies are enforced, priorities are better communicated, and projects are compared and justified on more equal footing based on objective metrics such as condition and ROI. As a further benefit, the standardized SMS methodology provides sound technical facility guidance to users at 25% the cost of traditional engineering assessments, while helping facility managers realize a roughly

40% savings of the total life cycle costs that can be achieved through proactive asset management.

In 2009, both the Navy and Marine Corps adopted BUILDER™ as their enterprise condition assessment and life cycle planning tools. In 2011 the Air Force selected BUILDER™ for its enterprise-wide facility assessment program, as did the Defense Logistics Agency (DLA). The Army is beginning its implementation in 2012, piloting BUILDER on mission-critical facilities at two test installations. Finally, the Office of Secretary of Defense (OSD) is pursuing adoption of a department-wide policy to use BUILDER™ for its Q-Ratings, allowing the Department to compare facility needs on a level playing field. Efforts are under way to extend BUILDER™ technology to other government agencies and the private sector, by pursuing a non-exclusive licensing strategy to provide a diverse set of capabilities (services, training, etc.) and establish a competitive environment for BUILDER™ services that lowers overall costs.

U.S. General Services Administration The NCR West Heating Closing

In the interest of reducing its footprint, energy use, and expenses, GSA NCR HOTD is in the process of disposing of its West Heating Plant, and consolidating its operations at the Central Plant. HOTD has thus been clearing out the West Plant of

all its useful equipment and supplies and making room for them, as well as the dozen employees of the organization's vital Steam Distribution Branch, at the Central Plant.

As part of this relocation, HOTD has successfully completed two major projects

- the relocation of over 570,000 gallons of No. 2 fuel oil
- the redesign of the second and third floor office areas to accommodate additional workforce

This consolidation project is all about using resources efficiently.

- All HOTD employees will now work from a single building.
- smart remodeling of office space in the plant provides workspace for a greater number of employees in the same amount of space
- redesign also includes an expansion of shared areas, encouraging greater communication among the workforce
- inventory of fuel is now ready to be used in steam production.
- GSA HOTD is able to remove a significant amount of expense from its books.

The project is a big step in the direction of an ever-leaner organization.

U.S. General Services Administration Cross Divisional Collaboration for the Rehabilitation of the Minneapolis Federal Office Building

The execution of numerous building repair and alteration projects that culminated in a holistic and comprehensive building rehabilitation, demonstrates that multiple different GSA business lines can work together in order to achieve the same goal of revitalizing an underperforming asset. The wide breadth of GSA professional knowledge and experience that collaborated together in order to execute the restoration and revitalization of the historic Minneapolis Federal Office Building, Minneapolis, Minnesota is worth commending.

When a Federal Building is on the brink of disposal, it takes a committed team to bring it back to life. The Minneapolis Federal Office Building in Minneapolis, Minnesota was a building on the cusp of disposal. Constructed in 1915, the National Register Listed property never received a prospectus project to fund the modernization of its building systems. As a result, the building limped through by using annual operating and minor repair and alteration program monies to support various repairs to those systems to keep them operational. These cumulative under-funded needs have resulted in a “Catch-22” situation where GSA had to decide between major investment and stable, long-term tenancy – both are interdependent on each other in

order to secure long-term financial stability for the property. Consequently, a majority of the building remained partially vacant for several years and as a result the financial justification for reinvestment was not present, leading to failed funding attempts.

With one tenant in place and potential backfill clients waiting in the wings, the Minnesota/Wisconsin Service Center jumped at the chance to encourage the redevelopment of the historic federal building. It would take upwards of twelve projects, five different GSA agency branches, four different architectural firms, multiple contractors, and several funding streams over two and a half years to restore and repopulate the building. Projects included everything from energy efficient HVAC systems, abatement of hazard materials, new historically sensitive sprinkler and fire alarm installation, renovation and restoration of the historic lobby and the design and installation of a new handicap accessible entrance and lift.

Ordinarily, service center field office teams work on building specific projects like this independently and include various design program subject matter experts as required. However, the service center quickly realized that coordinating so many projects in one building on top of their other building maintenance projects would be next to impossible. Therefore, the service center reached out to various GSA programs including, Historic Preservation, First Impressions, Accessibility, Fire and Life Safety, Security and Emergency Management and Asset Management.

Together, the extended team was able to re-prioritize, organize and execute the twelve plus interconnected and complex projects. These additional resources alleviated some of the burden on the local technical team, providing them the opportunity to focus more on managing multiple successful projects and less on catching small coordination issues between them.

The results have been truly amazing. In tenant space, the mechanical systems were re-routed avoiding areas of decorative plaster. Day-lighting has been creatively re-introduced to the perimeter of the building, by holding back the drop ceilings at least four feet away from the windows and uncovering the upper part of the original large window openings. As a result, the day-lighting now extends into the interior building spaces and once dim corridors, substantially brightening them. This is all in conjunction with the restoration of previously covered ornamental plaster ceilings. In public spaces, the new handicap lift and lobby modifications provide an accessible route to the building's historic barrel vaulted entrance. The new security enhancements work to screen the visitors, but not obstruct the visitor's view of the public lobby. Original, historic exterior light fixtures were refurbished and reinstalled. Most systems were upgraded, replaced and done so sensitively in respect to the buildings historic features.

The project have been a complete success in its ability to provide temporary swing space for a tenant needing to be relocated in a secure, federal building under a tight time frame, while meeting mission objectives.

The rehabilitation can also be used as an effective marketing tool for the building showcasing the superior space the building offers.

This complex project helped foster better communication and stronger relationships between the local service center staff and Architecture and Engineering Programs. The increased communication between the service center and the other technical branches aids all parties in realizing the same goal, which helped foster a sense of unity. The subjective outcome is a new respect for each other and an increased collaboration on subsequent projects. The end result for the building is new tenancy and the development of a future performing asset.

U.S. General Services Administration

Heating Operations & Transmission Division (HOTD) – Customer Survey

As part of its ongoing effort to improve customer service and to provide the Perfect Customer Experience, the Heating Operations & Transmission Division (HOTD) recently conducted an online survey of all its steam and chilled water customers. The survey was emailed to building contacts at each customer building, with a link to the online survey. Responders were asked to identify their respective buildings and answer about 31 questions under the headings of Condensate, Steam, Chilled Water, and Customer Service.

Responses to this will be used to assist HOTD management with:

- strategic decision making related to increasing plant efficiency and energy conservation
- better understand how customer buildings operate
- learn about key issues customers face.
- partnering with customer buildings to improve relationships & provide value-added solutions to customer problems.

The survey was recently closed with a survey completion rate of ~40%. HOTD staff is in the process of reviewing and analyzing the survey results, and has already identified some customers that are dumping some or all condensate to drain. HOTD Environmental & Water Chemistry Branch has already contracted with the Plant's Water Treatment Contractor to visit these buildings and work with the customers to provide an environmentally-friendly and cost-effective solution.

U.S. General Services Administration

The HOTD Energy Savings Analysis of Compressed Air Systems

The Central Heating Plant in Washington, DC, implemented a project to increase efficiency in the use of an often overlooked source of energy, compressed air. To this end, three 125-hp VSD air compressors were installed to replace costly, aging reciprocating compressors (maintenance on one of which would have been \$80,000

the same year). Improved cooling water control measures were also implemented as part of this project. The project is estimated to save 423,857 kWh and 12,371,520 gallons of water per year, amounting to roughly \$95K.

Energy Managers will agree that compressed air is often the most forgotten and neglected source of energy. While people tend to view air as a plentiful and free commodity, it is also a viable source of energy present in all utility sectors and, when managed correctly, air will provide significant savings in both energy and dollars. At the Central Heating Plant in Washington, DC, the Heating Operations and Transmission Division (HOTD) was faced with a decision to continue pouring maintenance dollars into a compressed air system that was supported by equipment at the end of its life, or to perform an update that would see the plant into the future. Looking at an \$80,000 maintenance overhaul for one of the three units and continuous issues with the other two units, HOTD decided to set a path toward the future. This decision presented an opportunity in both energy and resource conservation. In an effort to establish a baseline, a technical audit of the Central Heating!

Plant Compressed Air System was conducted in late 2009. The audit outlined a number of key steps that should be taken in an effort to produce and use compressed air resources more efficiently and effectively. It was also noted that a huge conservation of water resources would be seen if proper control mechanisms could be introduced.

The following two measures were accepted and implemented as the driving factors for improved maintenance, operation, and savings: Installation of three 125 HPVSD air compressors, replacing costly reciprocating compressors, and implementation of cooling water control measures. Prior to the project, the annual energy consumption of the compressors was about 1.2 million kWh. With the new compressors, the estimated annual energy usage was reduced by a third to about 0.8 million kWh, and saves HOTD roughly \$34K per year. The cooling water controls generate even greater savings. The three compressors use approximately 44 gallons per minute of water which is the same rate prior to the audit. However, control measures have been placed on each unit to engage cooling water flow only when a machine is running. Prior to the project, the compressors used about 36 million gallons of cooling water per year. The new controls again reduced usage by a third to about 23 million gallons per year. This amounts to savings of roughly \$62K each year. Savings are expected to pay back the cost of the project in five years. The project was a financially sound investment in efficient energy and resource management. It served to upgrade old machinery to sustain the vital operations of the historic Central Heating Plant in Washington, DC. It shows that, though historic, the plant continues alongside newer facilities to move towards ever-better energy management and more efficient operations.

U.S. General Services Administration HOTD Cogeneration Project

The HOTD Cogeneration Project generated savings that significantly defrayed annual costs of natural gas and electricity for plant operations, maximizing the ROI for cogeneration operations. Turbines have electricity capacity of 10MW, 50 Klb/hr steam capacity, and 326 MMBtu Heat input when combined with the duct burner. Net savings for the summer of 2008 were \$1.7M while demand capacity charges for 2009 were reduced by over \$500K. Overall Energy savings in 2010 were 238,807 MMBtu with savings of \$1.2M, including \$630K in demand capacity charge reduction. By recycling the waste energy to produce steam, carbon dioxide emissions were reduced by 20%.

The Heating Operations and Transmission District (HOTD), a division of GSA, upgraded its operations and reduced costs to customers with the completion and implementation of the Cogeneration Project. This project has helped GSA and HOTD customers achieve significant energy conservation and reduce operating expenses, and all achieved savings result in reduced costs for the American taxpayer. The installation of the cogeneration facility met the Main Steam Plant's electric needs while reusing waste heat for steam production.

In 2008, HOTD completed the installation of an upgraded turbine generator to provide electricity for all HOTD operations and sell surplus power back to the electric utility serving the site as well as recycle waste heat to produce additional steam for customers. This installation also included the addition of several more chillers so that HOTD could service Smithsonian Institution museums located along Independence Avenue. This eliminated the need for those facilities to install their own chillers beneath the National Mall, which would have included unsightly stacks. This installation generated savings that significantly defrayed the annual cost of natural gas and electricity for plant operations and maximized the return on investment for cogeneration operations.

By utilizing creative and innovative problem solving techniques, the HOTD Cogeneration Team was able to generate savings that significantly defrayed the annual cost of natural gas and electricity for plant operations and maximize the return on investment for cogeneration operations. Net savings for the three-month summer period of 2008 were \$1.7M while demand capacity charges for the 2009 were reduced by over \$500K, and overall energy savings in 2010 were 238,807 MMBtu with dollar savings of \$1.2M, including \$630K in demand capacity charge reduction. By recycling the waste energy to produce steam, carbon dioxide emissions were reduced by 20%. This improvement in operational efficiency is just one more aspect of the renewed focus of the entire HOTD organization on energy management and efficiency as mandated in EO 13423, and all achieved savings result in

reduced costs for the American taxpayer as well as for HOTD customers.

Enhanced customer relationships developed and established with PEPCO, HOTD's electric utility, result in HOTD being able to eliminate electricity use from the grid during peak demand hours. This helps the overall balancing of supply and demand on the electric grid and ensures stability, reduces power grid outages, lowers wholesale energy costs, and offers flexibility to meet demand at low costs.

HOTD provides steam for heating and hot water to more than 100 federal and quasi-federal buildings in Washington, DC, totaling over 50 million square feet of space as well as providing chilled water for cooling to 17 buildings; it is a huge system, maintaining 12 miles of underground tunnels and pipes. HOTD customers include the White House complex, the National Gallery of Art, numerous Smithsonian Institution facilities, and most of GSA's owned inventory in our National Capital, which includes Agency Headquarters buildings.

U.S. General Services Administration HOTD Treated Water System Upgrades

As part of an effort to upgrade the treated water system at the Central Heating and Refrigeration Plant in Washington, DC, George Korvah headed a GSA Heating Operations and Transmissions District project whereby information was gathered that allowed backup pump control valve

settings to be fine-tuned, and this resulted in significant energy savings of 441,679.2 kWh/yr and cost savings of \$35K per year. The adjustment made it so that the manually operated backup pumps are turned on far less frequently, if at all.

Being that the plant is nearing 80 years old, it requires regular maintenance not just to continue providing central heating services throughout the district, but to keep pace with environmental regulations and competitive service providers. In addition, both its and its customers' budgets are strapped as tightly as ever.

As a part of the fine tuning of the pumps, a pressure gauge was installed at the head of the de-aerator, and the pressure set-point for activating the backup pumps was successfully lowered from 55psi to 50psi, reducing the energy used by the system. This small adjustment to the controls system has a large effect, and it is expected to save about 3000 run-hours annually. Also, the backup pumps have not been used at all since the adjustment was made in December 2011.

The Central Heating and Refrigeration Plant in Washington, DC, provides steam

heating and chilled water cooling to more than eighty government and government-related buildings in the DC metropolitan area, amounting to over 75 million square feet of realty. Therefore, projects such as this, which generate savings at little cost, are all the more important. Mr. Korvah and his team excelled in making what they had go further than ever.

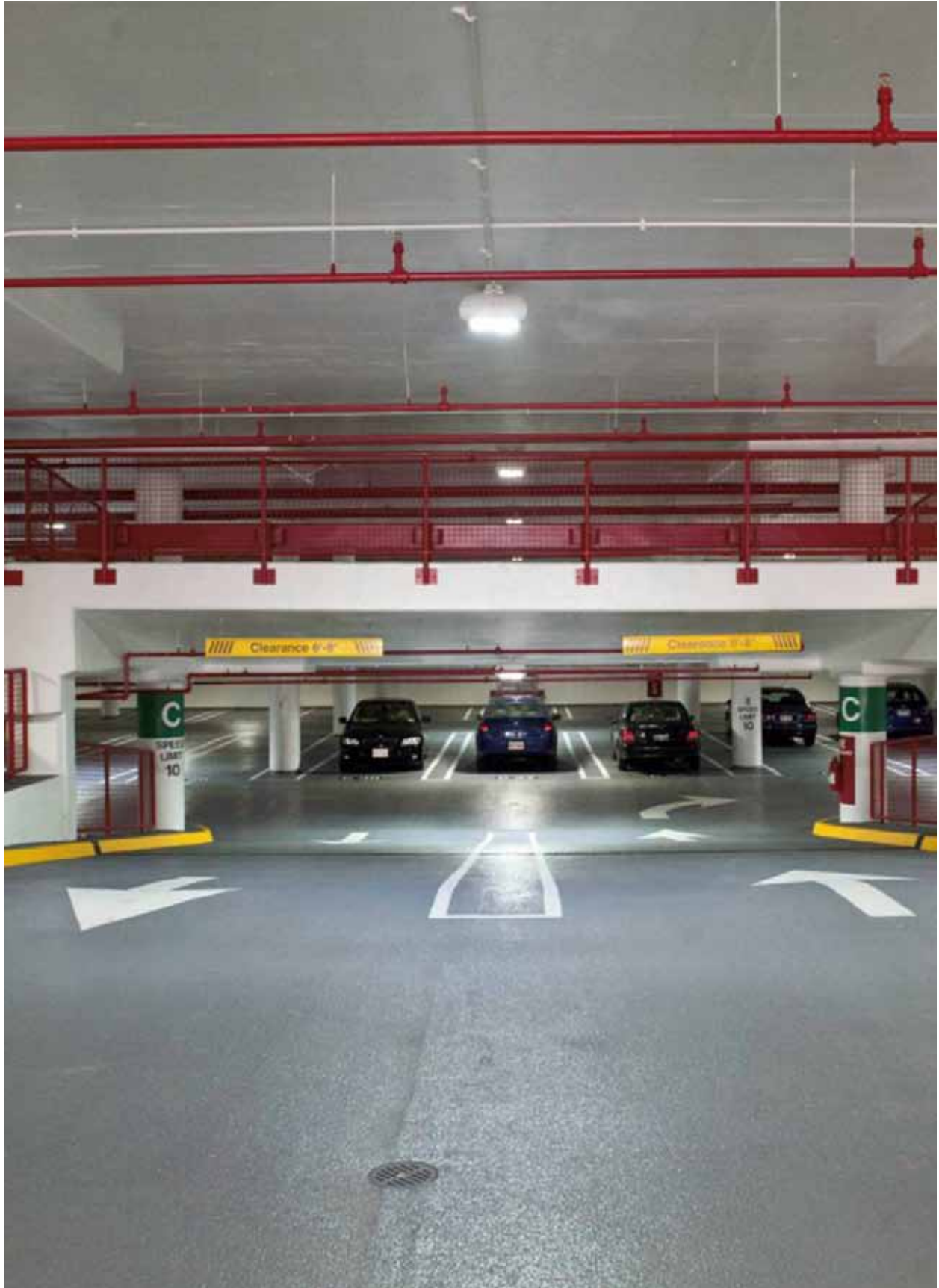
Other parts of this project, which were implemented in October 2011, include the replacement of a thirty-year-old pump and the throttling back of other existing pumps to reduce energy use from 200hp to 180hp. The controls system adjustment involved little monetary investment or any new equipment in and of itself; only the installation of a new pressure gauge was needed for the measurements.

HOTD is always working to streamline the plant's use of energy resources while operating as efficiently as possible. It is because of supervisors such as Mr. Korvah that HOTD is able finding low-cost, creative solutions to conserve energy as well as keeping costs low for HOTD customers.



Sustainability

This award recognizes exemplary initiatives, innovations and projects in Sustainability and communicates these cutting-edge ideas to agencies striving to improve their real property management. Achievements are related to sustainable business practices in the area of green buildings and workplaces, such as developing healthy, high-performance work environments and using environmentally responsible materials, methods and principles. Practices include alternative work strategies such as telework.





Winner

Architect of the Capitol

Architect of the Capitol East House Underground Garage

The East House Underground Garage was built in 1968, just south of the U.S. Capitol in central Washington, D.C.

The garage provides parking for Members of Congress and their staff who work in the adjacent Rayburn, Longworth and Cannon House Office Buildings. The majority of the structure is underground, consisting of

multilevel parking areas, ramps between levels, associated offices for the U.S. Capitol Police (USCP), egress stairways and a green rooftop and park where staffers and local residents can walk around or relax. The exterior is covered in stone and the rooftop is landscaped with grass, trees, and a center water feature. The garage is constructed of cast-in-place,



reinforced concrete with a main structural system of perimeter load bearing walls and interior concrete encased structural steel columns. The garage had not been significantly altered since its construction and was in need of renovations.

The goal of this renovation project was to repair the deteriorating conditions of the concrete and steel reinforcement; refurbish the USCP offices and locker area and circulation entry areas; incorporate new code requirements, life safety codes, AOC standards and guidelines; and achieve a minimum level of Silver Certification for LEED New Construction (NC) 2009.

This renovation project went above and beyond the sustainable standards set by the AOC by achieving LEED NC Gold Certification. The design and construction achieved a number of commendable sustainable benchmarks:

- 99% of construction waste was diverted from the landfill.

- 23% of the new construction material contained recycled content.
- 31% of the new construction material was regionally sourced.
- 24% reduction in energy consumption - this was achieved through the use of a new high-performance mechanical system and efficient LED light fixtures with motion-sensor control.
- 70% of the building's electricity will be supplied by sustainable wind power for the next two years. The AOC is committed to supplying its campus with sustainable energy through the purchase of Renewable Energy Certificates.
- 54% reduced water consumption - this was achieved through the use of waterless urinals, low-flow water closets and metered, low-flow faucets.
- 45 new bicycle racks for the use of House Staff.

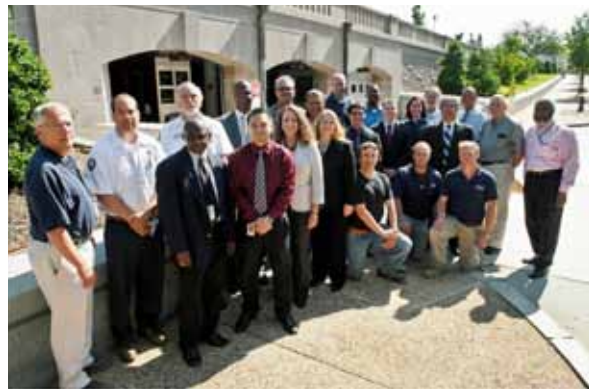
- Through the use of an innovative hydro-demolition system, the construction team was able to preserve the maximum amount of the building's concrete structure and maintain as much of the existing steel reinforcing as possible and reduce airborne pollutants generated by demolition of the concrete.
- Used low-VOC products (flooring, adhesives & sealants and paints)
- Implemented a Green Cleaning policy that enhances the building's indoor air quality by eliminating hazardous chemical use.
- The AOC will realize long-term financial savings on energy and water consumptions which are predicted to be paid off within 10 years.

Challenges were minimized due to extensive pre-design planning by the design team. Any field challenges to the development and implementation of this program during construction were addressed with full team involvement, incorporating the AOC goals and budget constraints, with the abilities of the design team and contractor's forces. Additional obstacles primarily stemmed from unforeseen hidden existing conditions within the 40-year old facility.

This project demonstrated the possibility for the AOC to achieve a high level of sustainability and the potential to go above and beyond its own sustainable standards. EHUG

set a high level of sustainable standards for future AOC projects, particularly through the successful waste diversion rate, water efficiency measure, use of hydro-demolition for conservation, and use of energy-efficient lighting systems. The AOC received letters of appreciation the Committee of House Administration, as well as the Director of House Parking Security for the U.S. House of Representatives.

The AOC is currently replicating the best practices and incorporating lessons learned from the EHUG project for the West House Underground Garage (WHUG) project. Knowledge from this project will also be used for future AOC projects on the Capitol Campus. The AOC can share its key take-aways with other organizations conducting renovations of existing garages and other older buildings.



Team Photo



Sustainability Recognized Entries

U.S. General Services Administration Mid-Atlantic Region James A. Byrne U.S. Courthouse and William J. Green, Jr. Federal Building Modernization Project Team

In March 2009 GSA submitted a plan to Congress, detailing how the agency would expend \$4.5 billion appropriated to GSA by the American Recovery and Reinvestment Act for projects to convert federal buildings into high-performance green buildings. The renovation of some of the building systems of the James A. Byrne U.S. Courthouse and William J. Green, Jr. Federal Building (noted as Byrne Green in this submission) in Philadelphia, Pennsylvania were part of this plan.

The Byrne Green Recovery Act Modernization Project Team was tasked with updating the building systems at this 1.7 million square foot federal complex. The team incorporated sustainable elements into the project, including replacing air handling units, upgrades to energy efficient lighting, and installation of a green vegetative roof at the Byrne Courthouse. Work at the Green Federal Building included the renovation of public restrooms, lighting upgrades, and installation of solar panels on the roof to generate clean, sustainable energy.

The modernizations at the Byrne U.S. Courthouse and Green Federal Building exemplify GSA Mid-Atlantic Region's commitment to promote sustainability, help communities, and advance a clean energy economy.

U.S. General Services Administration Heating Operations & Transmission Division (HOTD) – Chiller Plant Optimization

The Heating Operations & Transmissions Division currently operates its chiller plant by starting and stopping equipment based on customer demand. Currently the plant operates by matching the required equipment based on what chillers are available, anticipated weather conditions or time of day by manually starting and stopping equipment. Operating the chillers includes starting ancillary equipment such as additional chilled water pumps, condenser water pumps and cooling towers. The determination of which chiller or pump/tower combination to start is not always based on the most efficient method but rather to anticipate and meet the demand. The fundamental drawback to this approach is that there are periods where operating chillers may be started too early or left on longer than necessary. The optimization control system would evaluate the existing plant chilled water load and based on historical energy associated with each equipment necessary to meet that load determine the best combination of equipment necessary to achieve the demand and start the equipment automatically. In the event automatic operation is not in the best interest due to maintenance periods, the operators will be able to maintain control but will still be guided by the control system on the most efficient use of the plants equipment.

Integrating optimization control system improvements into the existing GSA chiller plant control system should generate potential energy savings. A well operated chilled water production facility should be able to produce chilled water at an energy consumption rate equal to or less than 0.9 kW per ton-hour. A review of the operational practices at HOTD suggests that energy consumption exceeds 1.1kW per ton-hour. HOTD data indicates the facility produces about 32,000,000 ton-hours annually at an average energy cost of \$0.13 per kWhr. Therefore, the implementation of automated control optimization achieving an energy consumption rate of 0.9kW per ton-hour will produce a savings of 0.20 kW per ton-hour and an annual energy cost reduction of \$832,000.

The National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration's - Environmental Security Computing Center (NESCC) Project, GSA Mid-Atlantic Region

The National Oceanic and Atmospheric Administration's (NOAA) is recognized as a world leader in understanding and predicting the Earth's environment, through advanced modeling capabilities, climate research, and real time weather products that have a wide-reaching influence on our Nation's economic, social, and environmental needs. Growing concerns

over global climate change, hurricanes, wildfires, and other environmental threats have spurred more public demand for climate and weather information with increased accuracy, shorter lead times, and local detail in model simulations.

To meet this demand, NOAA scientists require leadership-class, high performance computing (HPC) systems with petaflops-scale capabilities (a petaflop is one million-billion operations per second). NOAA estimates that this performance requirement is similar to that of the top 10 supercomputing environments in the world.

In order to accommodate this new large-scale supercomputing approach to environmental modeling, NOAA determined that it required a new, more flexible facility for its HPC program. This facility must be capable of supporting the vast array of technical and product delivery requirements to meet the needs of millions of diverse stakeholders, including NOAA scientists, academic researchers, private sector planners, Federal government partners, policy makers, intergovernmental systems, and ultimately the general public, particularly when life and property are threatened.

NOAA received funding through the American Recovery and Reinvestment Act of 2009 (ARRA) in the amount of \$170 Million directed to global climate modeling activities consisting of new HPCs, facility upgrades and high speed data network connectivity. Fairmont, WV is one of the new facility locations.

NOAA requested GSA Mid-Atlantic Region's expertise in federal lease acquisition and build-out services for establishing a new 54,000 square foot Environmental Security Computing Center (ESCC) in Fairmont, WV to support NOAA's mission-critical climate modeling activities by housing one of the HPCs. The facility provides necessary Class A office space for NOAA employees and a high density data center designed to provide significant HVAC and electrical infrastructure to support the heavy power and cooling loads generated by the HPC system. The \$25 million project was designed for a low power utilization efficiency (PUE) and sustainability goal to reach the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Commercial Interiors (CI) 2009, Silver certification. The U.S. Green Building Council doesn't currently have any LEED categories specifically tailored to provide guidance on sustainable HPCs, so the team submitted this project under the Commercial Interiors category. GSA worked very closely with NOAA and successfully acquired and built out the customized space in an expedited schedule of only thirteen months.

NOAA has been effusive in their praise of GSA's project team. Mid-Atlantic Region project team members received the NOAA Office of Chief Administrative Officer (OCAO) "Award of Excellence." The award recognizes the NOAA workforce and its partners for their significant achievements in furthering the NOAA OCAO mission.

Former NOAA Chief Administrative Officer, William F. Broglie, who presented the awards to GSA, stated:

“The GSA team demonstrated the excellence and client-focused service delivery essential for project success: effectively phasing the lease acquisition in order to significantly reduce the time required to make a best value selection and lease award; effectively negotiating the offeror’s tenant improvement proposal to ensure maximum value for the government; and working collaboratively with the NOAA team in managing the project and lease acquisition strategy to overcome project challenges.”

U.S. General Services Administration

Region 2- Green Power for Very Little Green

The General Services Administration Region 2 (Region 2) has purchased over 923 million kilowatt hours (kWh) of renewable power since FY01, well before the Energy Policy Act of 2005 and Executive Order 13423 promoted green purchasing. Region 2 currently ranks number five on the list of top ten largest purchasers of green power according to the EPA’s Green Power Partnership website . Three of GSA’s largest facilities in New York City – 290 Broadway, 26 Federal Plaza, and 500 Pearl Street – received 100% percent renewable power in FY11 and FY12. Continuing its leadership role, Region 2 ran competitive electricity procurements on November 17, 2011 that resulted in the purchase of

134 million kWhs of renewable power for various federal facilities located in the Consolidated Edison and National Grid service territories of New York. As remarkable as the amount of green power purchased was GSA and participating agencies will also save \$35 million when comparing the newly awarded rates to previous contract rates for these same facilities.

Region 2 uses a competitive electronic reverse auction process provided by the team of World Energy Solutions and Science Applications International Corporation. Unlike traditional paper bid methods, the reverse auction bidding method allows for real-time competition between qualified energy suppliers. Region 2 also uses a unique pre-qualification process and market analysis strategy which allows it to proactively take advantage of favorable market conditions, sometimes well in advance of current contract expiration dates. Pricing is solicited through the reverse auction technology referenced above. During the reverse auction, prices are bid down instead of up, and bidders compete against one another on a live, real-time basis. All bids submitted are “blind bids,” where suppliers see the lowest price being offered but not the name of the bidder submitting it. It is at each bidder’s discretion whether or not to bid lower. Each auction has a hard stop after which no additional bids are accepted.

On the day of the auction, Region 2 typically requests a number of pricing products such as conventional power, renewable power

and fixed price as well as multiple service terms including twelve months, twenty-four months and thirty-six months. So the auction event is actually comprised of a series of reverse auctions, typically spaced to end five minutes apart from one another. This element of “auction architecting” spurs competition by giving suppliers who lose one round the chance to sharpen their pencils and bid more aggressively in the next, a dynamic that greatly benefits the buyer and its constituents. Region 2 then takes the lowest prices offered for each set of accounts and works with participating agencies to determine which prices to award.

Based on Region 2's proactive market approach and unique method to getting facility managers prepared for bidding events prior to the day of each auction, award decisions are made before 2:00 PM on the same day each auction occurs. This significantly reduces the market price risk premium suppliers assess when asked to hold their prices open overnight or for even longer periods of time as some public agencies still require.

U.S. General Services Administration

The Northwest/Arctic Green Teams Program

The Northwest/Arctic Green Teams program is designed to bring together “green” champions from all federal agencies within federal buildings to promote changes in behavior that contribute to increases in our buildings' performance

levels. Influencing changes in occupant culture and behavior is recognized as an effective means of reducing our collective environmental footprint, which in turn supports the goals identified in Executive Order 13514.

The program began in the fall of 2010 with the development of a Guide that walks teams through simple 7 steps to launching a green team as well as sustainability 101 training along with tools and templates to facilitate the creation of the team and associated activities. These resources are available at www.gsa.gov/r10greenteams.

The strategy Region 10 pursued began by the GSA Regional Office being the first team to create a Green Team. It was important that to understand the perspective of tenants and to walk the talk. Additional buildings were identified to serve as a pilot of the program. Those six buildings were the Jackson Federal Building and Federal Office Building in Seattle, WA; the Pioneer and Hatfield Courthouses in Portland, OR; the Morse Courthouse in Eugene, OR; and the Foley Courthouse in Spokane, WA.

The two prong approach begins with leadership in the buildings and connecting sustainability to agency goals, specifically their Strategic Sustainability Performance Plans. The Program Manager facilitates a meeting with agency leadership within the space establishing the foundation and commitment to the Green Team. The agencies identify a Champion for the Team as well as their members. Approximately

two weeks after the leadership meeting, the GreenTeams' Program Manager facilitates the building's GreenTeam membership. This connects the program to the second part of the prong – the grass roots effort in the space. This is still done by tying it to the EO 13514 and the connection to their agency goals. It then builds on the ideas they have to facilitate change within the building. They then finalize their charter by identifying their goals and activities for the year as well as establishing a meeting frequency and selection of a Chair for the Team.

These GreenTeams influence more change in green practices within a building than would be possible if building management pursued operational changes only. Often they come up with creative ways to change building operations that GSA would have thought they would have opposed. It also compliments GSA's pursuit of LEED EB O&M for operational excellence.

The GreenTeams Program Manager hosts quarterly calls for building GreenTeams and GSA facility operations to exchange ideas and best practices. Agencies from buildings not in the first 7 for the pilot, have been asking to have the same opportunity in their building.

U.S. General Services Administration HOTD Treated Water System Upgrades

As part of an effort to upgrade the treated water system at the Central Heating and Refrigeration Plant in Washington, DC, George Korvah headed a GSA Heating

Operations and Transmissions District project whereby information was gathered that allowed backup pump control valve settings to be fine-tuned, and this resulted in significant energy savings of 441,679.2 kWh/yr and cost savings of \$35K per year. The adjustment made it so that the manually operated backup pumps are turned on far less frequently, if at all.

Being that the plant is nearing 80 years old, it requires regular maintenance not just to continue providing central heating services throughout the district, but to keep pace with environmental regulations and competitive service providers. In addition, both its and its customers' budgets are strapped as tightly as ever.

As a part of the fine tuning of the pumps, a pressure gauge was installed at the head of the de-aerator, and the pressure set-point for activating the backup pumps was successfully lowered from 55psi to 50psi, reducing the energy used by the system. This small adjustment to the controls system has a large effect, and it is expected to save about 3000 run-hours annually. Also, the backup pumps have not been used at all since the adjustment was made in December 2011.

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his team excelled in making what they had gone further than ever.

Other parts of this project, which were implemented in October 2011, include the replacement of a thirty-year-old pump and the throttling back of other existing pumps to reduce energy use from 200hp to 180hp. The controls system adjustment involved little monetary investment or any new equipment in and of itself; only the installation of a new pressure gauge was needed for the measurements.

HOTD is always working to streamline the plant's use of energy resources while operating as efficiently as possible. It is because of supervisors such as Mr. Korvah that HOTD is able finding low-cost, creative solutions to conserve energy as well as keeping costs low for HOTD customers.

U.S. General Services Administration

HOTD Sustainable Water Conservation in Open Cooling Towers

The Central Heating and Refrigeration Plant in Washington, DC, provides steam heating and chilled water cooling to more than eighty government and government-related buildings in the DC metropolitan area, amounting to over 75 million square feet of realty. While providing this service, the Heating Operations and Transmissions Division (HOTD), is always working to minimize the plant's use of energy resources and operate as efficiently as possible. One important source of energy use is in the

massive amount of water that is essential to the system. In 2011, HOTD implemented a project to conserve water which required the installation of only a minimal amount of equipment, but which generates significant savings in resources and dollars. The project for sustainable water conservation in open cooling towers was implemented to provide 100% improvement in water cycles of concentration in cooling towers via the installation of systems that deliver a measured quantity of chemical into the cooling towers. The chemical (sulfuric acid) is fed into the cooling towers to neutralize compounds that restrict cooling water from obtaining higher cycles. The project involved only the installation of control systems, a chemical holding tank, chemical feed pumps, and double-walled chemical delivery pipes to the cooling towers to neutralize alkalinity and calcium carbonate, and to increase the holding time of the minerals responsible for potential scaling in the chillers' condenser tubes. Two controllers constantly monitor the characteristics of the treated water and send information to the feeding pumps to adjust their rates accordingly. The system is fully automatic to optimize chemical dispend into the system as well as providing the best cycles achievable by the cooling towers.

Before implementation of the project, with the cooling tower cycles of concentration averaging 3.0, the 10-year average water usage was 25 million gallons per year for blow-down, and 75 million gallons per year for fresh water make-up. When the system became operational, the cooling tower cycles of concentration increased to 6.0, conserving more water in the tower,

reducing excessive blow downs, and minimizing chemical usage. Annual water usage thereby decreased by 50%, to 12.5 million gallons for blow-down and 37.5 million gallons for fresh water make-up. (The cooling tower has a total volume of 160,000 gallons.) The savings on water usage add up to about \$240K. Additionally, about \$150K is saved on chemicals used to treat water in the towers. Factoring in the

cost of installation (\$82K), maintenance (\$10K), and the sulfuric acid required by the system (\$32K), the project paid for itself and generated \$266K in net savings its first year of operation. Excluding the cost of installation, the project generates about \$350K in savings per year. Future increases in cooling tower cycles of concentration are expected, and will lead to increased savings from the system.

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